

CLAIMS

1. A method for the identification and investigation of a receptor in target tissue for which a selected vector has affinity, said method comprising:

- i) creating retroviral particles containing a library of mRNA from the target tissue;
- ii) transfecting a non-adherent cell line which does not bind with the selected vector by infecting the cells with said retroviral particles;
- iii) adding to the transfected cell line a suspension of encapsulated gas microbubbles to which the selected vector is coupled and allowing the microbubbles and cells coupled thereto to float to the surface of the suspension;

iv) isolating the microbubble-bound cells at the surface;

and either

v-a) lysing the isolated cells, amplifying the receptor-encoding cDNA therefrom and sequencing said cDNA; and optionally

v-b) comparing the thus-obtained sequence data with gene bank sequence data;

or

vi-a) culturing the isolated cells; and

vi-b) investigating affinities of vectors to the isolated cells.

2. A method according to claim 1 wherein said vector is selected from peptides, proteins, antibodies, nucleotides, hormones, growth factors, cytokines, carbohydrates, lipids, therapeutic agents and drugs acting through receptor-mediated cell entry.

3. A method according to claim 1 or claim 2 wherein the

encapsulated microbubbles of step iii) are
selected from microbubbles of gas stabilised by a
coalescence-resistant surface membrane, a filmogenic
protein, a polymer material, a lipid, a non-polymeric and
5 non-polymerisable wall-forming material and a surfactant.

4. A method according to claim 3 wherein said surfactant is
selected from one or more phospholipids and one or more
lipopeptides.

5. A method according to any of claims 1 to 4 wherein
said gas is a biocompatible gas or gas mixture selected
from perfluorinated gases, preferably from sulphur
hexafluoride, perfluoropropane, perfluorobutanes,
15 perfluoropentanes and perflurohexanes.

6. A method according to any of claims 1 to 5
wherein said gas is perfluorobutane and said surfactant
is phosphatidylserine.

7. A method according to any of claims 1 to 6 wherein the
microbubbles are removed before or after culturing, said
removal is effected by bursting with a technique selected
from ultrasonication, pH change or transient application
25 of overpressure or underpressure.

8. Microbubble-bound transfected cells producible
by method steps i) to iv) of claim 1.

9. Microbubble-bound transfected cells according to
claim 8 wherein the microbubbles are of similar size to
the transfected cells, preferably the microbubbles have
diameters of 1 to 10 um, more preferably 3 to 5 um.

10. Use of microbubble-bound cells according to claim 8 or claim 9 for the investigation of diseases involving said receptors.

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